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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,063	06/06/2002	Chewnpu Jou	8520-US-PA	2126

31561 7590 07/14/2004

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
LE, DUY K	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/064,063	JOU, CHEWNPU	
	Examiner	Art Unit	
	Duy K Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-12 and 14-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Zeijl (U.S. Patent 6,285,307).

As to claim 1, Figures 3 and 4 in Van Zeijl show an integrated radio-frequency receiver (see Col. 7, lines 58-64), comprising:

a local oscillator (3), to generate a local oscillation signal (see Col. 7, line 65 to Col. 8, line 3);

a mixer apparatus (1, 2, 4, 5, 6, 7), coupled to the local oscillator to receive a radio-frequency carrier input signal and the local oscillation signal, and to mix, filter and amplify the radio-frequency carrier input signal and the local oscillation signal to output a first amplified signal ($U_I(t)$) and a second amplified signal ($U_Q(t)$) (see Col. 8, lines 4-26);

a phase-shift apparatus (8), coupled to the mixer apparatus to shift phases of the first and second amplified signals with a first degree and a second degree, and to output a first phase-shifted signal and a second phase-shifted signal (see Col. 8, lines 27-34); and

an analog-to-digital conversion apparatus (9, 10, 12, 13), coupled to the mixer apparatus and the phase-shift apparatus to receive the first amplified signal and the second phase-shifted

signal, and the second amplified signal and the first phase-shifted signal, so as to output an in-phase signal and an orthogonal-phase signal by performing analog-to-digital conversion thereon, respectively (see Col. 8, lines 35-52 and Col. 9, lines 13-25).

As to claim 2, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claim 1, wherein the phase-shift apparatus comprises:

a first phase shifter (8), coupled to the mixer apparatus and the analog-to-digital conversion apparatus to receive the first amplified signal, and to shift the first amplified signal with the first degree to output the first phase-shifted signal (see Col. 8, lines 27-34); and

a second phase shifter (8), coupled to the mixer apparatus and the analog-to-digital conversion apparatus to receive the second amplified signal, and to shift the second amplified signal with the second degree to output the second phase-shifted signal (see Col. 8, lines 27-34).

As to claims 3 and 15, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 2 and 14, wherein the first degree is 90° (see Col. 8, lines 27-34).

As to claims 4 and 16, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 2 and 14, wherein the second degree is 90° (see Col. 8, lines 27-34).

As to claims 5 and 17, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 2 and 14, wherein the first phase shifter is operative to reduce an intermediate frequency (see Col. 2, lines 19-24 and lines 35-38, and Col. 8, lines 27-34).

As to claims 6 and 18, the Van Zeijl reference discloses The integrated radio-frequency receiver according to claims 2 and 14, wherein the second phase shifter is operative to reduce an intermediate frequency (see Col. 2, lines 19-24 and lines 35-38, and Col. 8, lines 27-34).

As to claims 7 and 19, the Van Zeijl reference discloses The integrated radio-frequency receiver according to claims 2 and 14, wherein the first phase shifter is implemented by a switching capacitor circuit (see Col. 8, lines 27-34).

As to claims 8 and 20, the Van Zeijl reference discloses The integrated radio-frequency receiver according to claims 2 and 14, wherein the second phase shifter is implemented by a switching capacitor circuit (see Col. 8, lines 27-34).

As to claim 9, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claim 1, wherein the mixer apparatus comprises:

a 90° phase shifter, coupled to the local oscillator to receive the local oscillation signal and to shift the phase of the local oscillation signal by 90°, and to output a 90° shifted local oscillation signal (see Col. 7, line 65 to Col. 8, line 3);

a first mixer (1), coupled to the local oscillator to receive and mix a radio-frequency carrier input signal and the local oscillation signal, so as to output a first intermediate-frequency signal (see Col. 8, lines 4-26);

a second mixer (2), coupled to the 90° phase shifter to receive and mix the radio-frequency carrier input signal and the 90° shifted local oscillation signal, so as to output a second intermediate-frequency signal (see Col. 8, lines 4-26);

a first filter (6), coupled to the first mixer to receive the first intermediate-frequency signal and to filter the first intermediate-frequency signal to output a first base-band signal (see Col. 8, lines 4-26);

a second filter (7), coupled to the second mixer to receive the second intermediate-frequency signal and to filter the second intermediate-frequency signal to output a second base-band signal (see Col. 8, lines 4-26);

a first amplifier (4), coupled to the first filter to receive and amplify the first base-band signal and output a first amplified signal (see Col. 8, lines 4-26);

a second amplifier (5), coupled to the second filter to receive and amplify the second base-band signal and output a second amplified signal (see Col. 8, lines 4-26).

As to claims 10 and 21, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 9 and 14, wherein the first filter includes a low-pass filter (see Col. 8, lines 20-22).

As to claims 11 and 22, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 9 and 14, wherein the second filter includes a low-pass filter (see Col. 8, lines 20-22).

As to claim 12, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claim 1, wherein the analog-to-digital conversion apparatus comprises:

a first sample maintaining apparatus (9), coupled to the mixer apparatus and the phase-shift apparatus to receive the first amplified signal and the second phase-shifted signal, and to perform arithmetic operation and sample maintaining thereon to output a first sample maintaining signal (see Col. 8, lines 35-52);

a second sample maintaining apparatus (10), coupled to the mixer apparatus and the phase-shift apparatus to receive the second amplified signal and the first phase-shifted signal,

and to perform arithmetic operation and sample maintaining thereon to output a second sample maintaining signal (see Col. 8, lines 35-52);

a first analog-to-digital converter (12), coupled to the first sample maintaining apparatus to receive the first sample maintaining signal, and to perform analog-to-digital conversion thereon to output the in-phase signal (see Col. 9, lines 13-25); and

a second analog-to-digital converter (13), coupled to the second sample maintaining apparatus to receive the second sample maintaining signal, and to perform analog-to-digital conversion thereon to output the orthogonal-phase signal (see Col. 9, lines 13-25).

As to claim 14, Figures 3 and 4 in Van Zeijl show an integrated radio-frequency receiver (see Col. 7, lines 58-64), comprising:

a local oscillator (3), to generate a local oscillation signal (see Col. 7, line 65 to Col. 8, line 3);

a 90° phase shifter, coupled to the local oscillator to receive the local oscillation signal and to shift the phase of the local oscillation signal by 90° into a 90° shifted local oscillation signal to be output (see Col. 7, line 65 to Col. 8, line 3);

a first mixer (1), coupled to the local oscillator to receive and mix a radio-frequency carrier input signal and the local oscillation signal to output a first intermediate-frequency signal (see Col. 8, lines 4-26);

a second mixer (2), coupled to the 90° phase shifter to receive and mix the radio-frequency carrier input signal and the 90° shifted local oscillation signal to output a second intermediate-frequency signal (see Col. 8, lines 4-26);

a first filter (6), coupled to the first mixer to receive and filter the first intermediate-frequency signal to output a first base-band signal (see Col. 8, lines 4-26);

a second filter (7), coupled to the second mixer to receive and filter the second intermediate-frequency signal to output a second base-band signal (see Col. 8, lines 4-26);

a first amplifier (4), coupled to the first filter to receive and amplify the first base-band signal and output a first amplified signal (see Col. 8, lines 4-26);

a second amplifier (5), coupled to the second filter to receive and amplify the second base-band signal and output a second amplified signal (see Col. 8, lines 4-26);

a first phase shifter (8), coupled to the first amplifier to receive and shift the phase of the first amplified signal with a first degree, so as to output a first phase-shifted signal (see Col. 8, lines 27-34);

a second phase shifter (8), coupled to the second amplifier to receive and shift the phase of the second amplified signal with a second degree, so as to output a second phase-shifted signal (see Col. 8, lines 27-34);

a first sample maintaining apparatus (9), coupled to the first amplifier apparatus and the second phase shifter to receive the first amplified signal and the second phase-shifted signal, and to perform arithmetic operation and sample maintaining thereon to output a first sample maintaining signal (see Col. 8, lines 35-52);

a second sample maintaining apparatus (10), coupled to the second amplifier and the first phase shifter to receive the second amplified signal and the first phase-shifted signal, and to perform arithmetic operation and sample maintaining thereon to output a second sample maintaining signal (see Col. 8, lines 35-52);

a first analog-to-digital converter (12), coupled to the first sample maintaining apparatus to receive the first sample maintaining signal, and to perform analog-to-digital conversion thereon to output the in-phase signal (see Col. 9, lines 13-25); and

a second analog-to-digital converter (13), coupled to the second sample maintaining apparatus to receive the second sample maintaining signal, and to perform analog-to-digital conversion thereon to output the orthogonal-phase signal (see Col. 9, lines 13-25).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,285,307 to Van Zeijl in view of Lee (U.S. Patent 4,328,590).

As to claims 13 and 23, the Van Zeijl reference discloses the integrated radio-frequency receiver according to claims 1 and 14. However, it does not expressly disclose a single-side-band receiver. The Lee reference teaches a single-side-band receiver (see Col. 3, line 15 to Col. 4, line 50 and Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Van Zeijl to include a single-side-band receiver, as taught by Lee, in order for use in a communications system having tightly packed channels.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Kogan (U.S. Patent 5,298,902) discloses analog-to-digital converter employing multiple parallel switching capacitor circuits.

b. Meehan (U.S. Patent 6,115,419) discloses adaptive digital beamforming receiver with $\pi/2$ phase shift to improve signal reception.

c. Chan et al. (U.S. Patent 6,650,264) discloses quadrature sampling architecture and method for analog-to-digital converters.

d. Yoshida et al. (U.S. Patent 5,742,189) discloses frequency conversion circuit and radio communication apparatus with the same.

e. Scheck (U.S. Patent 6,075,980) discloses interference suppression in RF signals.

f. Moore et al. (U.S. Patent 6,035,186) discloses integrated receiver.

g. Hamada et al. (U.S. Patent Application Publication 2003/0194983 A1) discloses semiconductor integrated circuit device.

h. Gharpurey (U.S. Patent Application Publication 2002/0004372 A1) discloses radio architecture for use with frequency division duplexed systems.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le
June 29, 2004

7/12/04

QUOCHIEN B. VUONG
PRIMARY EXAMINER